DOCUMENT RESUME

ED 207 181 EA 013 940

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TITLE A Model of Crisis Decision Making in Organizations.
SPONS AGENCY National Inst. of Education (DHEW), Washington, D.C.
PUB DATE Sep 79
GRANT NIE-G-78-0165
NOTE 77p.

EDRS PRICE MF01/PC04 Plus Postage.
DESCRIPTORS Administrator Attitudes; *Conflict Resolution; Decision Making; Elementary Secondary Education; Fear; Models; Principals; *Problem Solving; Time
IDENTIFIERS *Crisis Management

ABSTRACT

Testing the validity of a model incorporating the "threat" factors in crisis decision-making, this study rested on the assumption that the threat of crisis decision-making stems from two sources: perceived effects of the crisis (stimulus threat) and perceived adequacy of capabilities for dealing with the crisis (response threat). Stimulus threat was predicted to be based on certainty about decision outcomes and potential for loss. Response threat was predicted to be based on adequacy of available resources and prior experience with a similar crisis. It was also proposed that the relationship between stimulus and response threat and the eventual decision outcomes would be contingent upon time available. The model was tested using a laboratory study and a field study. In the laboratory study 104 students were given questionnaires containing hypothetical crisis situations. In the field study nine principals participated in interviews concerning real crisis situations. In general, results of the laboratory study produced only partial support for the model. Results of the interviews indicated that principals varied considerably about how threatening a situation must be to be considered a crisis, and that, in some cases, time was used as a resource. A number of other more specific findings emerged. (Author/JM)

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A MODEL OF CRISIS DECISION MAKING IN ORGANIZATIONS*

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September 1979

*Partial support for this project was provided by the National Institute of Education, Department of HEW, Grant No. NIE-G-78-0165.

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Acknowledgments

I would like to thank Col. Billy C. Butler, Commander of the University of Oklahoma's Army ROTC detachment, for his assistance and cooperation in making students available for preliminary testing of the model, and Capt. Donald Dragg, Assistant Professor of Military Science, for his efforts in coordinating this testing. I am also indebted to Mr. Raymond Torres (Graduate Teaching Assistant) and Dr. Judy Katz (Assistant Professor of Human Relations) for their help in providing students for subsequent testing of the model. I owe particular thanks to the superintendent of schools and his administrative assistant in the school system where I conducted interviews with the principals. Because of a pledge of confidentiality, I am unable to reveal the names of these individuals or the school system. I also would like to thank Ms. Patricia Smith and Ms. Barbara Kidwell for their work as research assistants. Finally, I would like to express my appreciation to the National Institute of Education for funding this project and particularly Mr. Fritz Mulhauser who served as project officer.

Abstract

It was proposed that the threat associated with crisis decision making stems from two sources: 1) perceived effects of a crisis (stimulus threat), and 2) perceived adequacy of capabilities for dealing with a crisis (response threat). Stimulus threat was predicted to be based upon: 1) certainty about decision outcomes, and 2) potential for loss if a crisis is not resolved. Response threat factors were predicted to be based upon: 1) adequacy of available resources, and 2) prior experience with a similar crisis. In addition, it was postulated that the relationship between stimulus and response threat and the eventual decision outcomes would be contingent upon the amount of time available. The major objective of this project was to test the validity of a model that incorporated these threat factors. The model's validity was tested using a laboratory study and interviews with school principals. Results of the laboratory study indicated that the time and perceived value loss potential were seen as the two most important threat factors. Measurement problems with the resources variable made the impact of this factor less clear. Results of the interviews revealed that principals varied considerably in their perceptions of how threatening a situation must be to be considered a crisis and that, in some cases, time was used as a resource to "buy" time in the hope that the crisis would work itself out.

Executive Summary

A two-phase study was conducted to test the development of a crisis decision making model. The model postulated that two stimulus threat factors (resources and experience) and two response threat factors (outcome certainty and value loss potential) would be multiplicatively related to decision outcomes, but moderated by the amount of available time.

In Phase I, a laboratory experiment was conducted using two case studies representing high and low threat situations faced by a high school principal. Subjects were asked to rate the case studies on the threat factors, the decision outcomes, and two supplemental variables: likelihood of decision effectiveness and overall threat amount. Results indicated: (1) that the instrument used to measure the threat factors possessed only moderate internal consistency reliability, (2) time and value loss potential are the most clear-cut factors, while the resources variable seems to be factorially complex, (3) the threat factors are only moderately predictive of the decision outcomes, (4) time does seem to moderate the relationship between the postulated threat factors and decision outcomes and supplemental variables, and (5) the particular model used (mixed, additive, multiplicative) to predict the outcomes appears to make little difference, as all the models were equally predictive. It was concluded that the one area needing most attention is the resources variable. Different resources will be rated differently in different situations and the nature of these perceptual differences requires additional clarification. The stimulus and response aspects of a crisis, however, do seem to be valid constructs warranting further investigation.

In Phase II, a field study using interviews with school principals was conducted. The purpose of this phase was to explore the process aspects of crisis situations. Results of the interviews revealed considerable diversity in style and manner of response to crisis situations. Among

the major findings were: (1) varied perceptions of how severe a situation must be, to be considered a crisis; (2) a perceived high degree of confidence in how successfully the crises were dealt with; (3) a perception that routine procedures pertain to prescribed administrative functions and activities while nonroutine procedures involve interactions with students, parents, and in some cases, teachers; (4) a high use of nonroutine or routine and then nonroutine procedures during crises; (5) a perception of increased crisis severity over time as some principals hoped that the situation would "work itself out;" (6) a large amount of time being spent in dealing with crises but relatively little time (and even less difficulty) in making a decision; and (7) almost unanimous agreement that the crises would be handled differently if encountered again. When confronted with crises involving other people, many of the principals regretted having been too lenient and indecisive. In general, the results seemed to support the view of crises involving a recycling of activities (i.e., searching for, evaluating, and selecting solutions), rather than as situations that can be handled using a discrete series of sequential steps.

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Because of rapid increases in knowledge, technology changes, and shifting environmental conditions, organizations are becoming more and more aware of the need for flexible decision making models. Deeply-ingrained patterns of decision behaviors, however, are difficult to disrupt. As a result, many existing decision methodologies are inadequate for the variety of problems encountered and the frequency with which they appear.

Situations implicitly or explicitly defined as crises seem to be especially problematic for organizational managers. Unfortunately, the academic literature provides few guidelines on how to deal with crisis situations. The majority of this literature seems to emphasize rational decision models where alternatives and consequences of their selection are relatively certain. Only recently has attention been directed toward the description of processes stimulated by unstructured, ambiguous problems (Mintzberg, Raisinghani & Theoret, 1976; Brightman, 1978). In addition, little assistance has been provided for defining and measuring variables that constitute crises and the impact of these variables upon decision outcomes.

The purpose of this paper is to develop and test a conceptual model that could be useful for defining and measuring crisis situations in organizations--especially educational organizations. The model was tested in both laboratory (Phase I) and field (Phase II) settings. The conceptual basis of the model is presented first, followed by a description of the model, and then the results obtained from the laboratory and field investigations.

CONCEPTUAL BASIS OF THE MODEL

Previous research on crises has failed to provide convergence on a universally acceptable, yet operational definition of a crisis. Most descriptions of crises have included elements of threat (Hermann, 1963; Lang & Lang, 1964; Fink, Beak & Taddeo, 1971; Milburn, 1972; Janis & Mann, 1977),

intense pressure (Lundberg, 1970; Milburn, 1972; Mintzberg, et al., 1976), suddenness of appearance (Hermann, 1963; Lang & Lang, 1964), and shortness of available time (Zablocki, 1966; Lundberg, 1970; Milburn, 1972; Janis & Mann, 1977). With the possible exception of the work of Janis and Mann (1977), little attention has been given to the elements of decision making involved in crises. Although crises may be characterized by various subjectively- and objectively-perceived dimensions, the concept of a crisis also connotes goal-directed behavior to resolve a situation.

For the purposes of this paper, a crisis will be defined as the point in time at which it is decided that a decision must be made on how to deal with a situation of perceived threat. This definition recognizes the subjectively stressful components of a crisis stimulus and, at the same time, suggests that part of the perception of a crisis is derived from the necessity to do something about that stimulus. The actions decided upon and implemented might then precipitate a new crisis, although the original stimulus still exists. Thus, a crisis is a specific perceptual state while crisis decision making is the process used in an attempt to alter this state.

Depending upon the constraints and contingencies presented by a crisis situation, subsequent decision behaviors could involve a dynamic cycle of decisions and recycles. A decision made to take no action, for example, could increase or decrease the amount of perceived threat, create a new perceptual state (crisis), trigger new behaviors and so on, until it is perceived that a crisis situation no longer exists.

The proposed crisis model is based upon the premise that the perceived threat inherent in a crisis situation stems from two sources: 1) the threat posed by the problem stimulus, and 2) the threat involved in the process of deciding how to deal with the stimulus. This latter source is seen as arising from an organization's assessment of the capabilities it can bring to bear

upon the problem. Both sources should interact, in a multiplicative fashion, to influence the overall threat perception.

The threat posed by the problem stimulus is operationally defined using two factors: outcome certainty and value loss potential. The threat posed by the process of deciding is defined using the factors of resources and experience. The proposed interrelationship of these factors is described below.

Overall threat = (resources + experience) x (outcome certainty + value loss potential)

Because of the dynamic nature of crisis situations, the relationship between perceptions of overall threat and decision outcomes will be moderated by perceptions of available time for each crisis decision cycle. In dealing with a given problem stimulus, units of time will be consumed in direct proportion to the number of cycles used to deal with a crisis situation. Consequently, perceptions of overall threat will vary with the amount of perceived time available for each decision situation.[1]

DESCRIPTION OF THE CRISIS MODEL

The basic elements of the model and their interrelationships are presented in Figure 1. The four threat factors are defined as follows:

Resources. The extent to which information, personnel, money, or equipment are perceived as available and adequate to deal with the problem.

Experience. The extent to which a precedent exists among organizational members for dealing with the problem as perceived.

Outcome Certainty. The extent to which decision makers are confident about outcomes associated with different decisions.

Value Loss Potential. The extent to which the organization stands to "lose" something of value if the problem is not successfully resolved.

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[1]The primary rationale for selection of the factors has been drawn from the work of Kurnal (1976; 1977) and previous work of the author (VanGundy, 1978), and are not reported here.

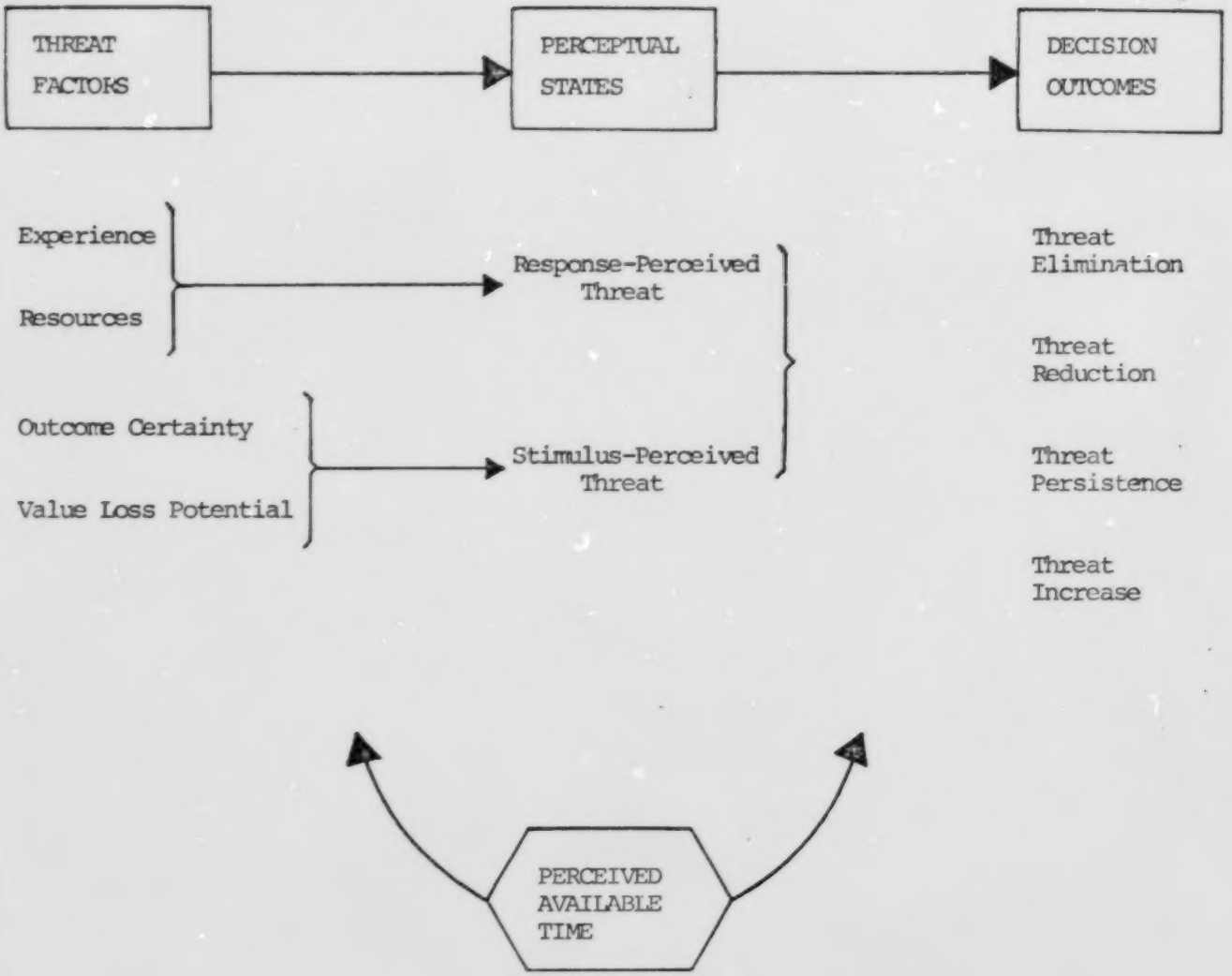

Figure 1. Crisis Model Depicting Relationships Between Threat Factors and Decision Outcomes as Moderated by Perceived Available Time

The model proposes that the perceptual state of threat involved in deciding how to deal with a problem is created by the resource and experience factors; the perceptual state arising from the problem itself stems from the outcome certainty and value loss potential factors. These two perceptual states have been labeled response-perceived threat and stimulus-perceived threat and are defined as follows:

Response-Perceived Threat. The extent to which the problem itself creates threat perceptions. Operationally, this dimension pertains to the subjective outcome probabilities associated with the stimulus.

Stimulus-Perceived Threat. The extent to which the process of deciding on how to deal with the problem creates threat perceptions. Operationally, this dimension reflects the instrumental qualities associated with the decision process.

As mentioned, the interaction of these states should be multiplicative in nature. As resources and experience are evaluated and found favorable for a crisis situation, for example, there should be a corresponding increase in outcome certainty perceptions and a decrease in value loss potential perceptions. Furthermore, the interaction of the perceptual states should influence the decision outcomes of threat elimination, reduction, persistence or increase. If both the problem stimulus and the problem response are perceived as possessing low threat, the probability is increased that the crisis situation will be eliminated or reduced rather than persist or increase. The amount of perceived available time, however, should largely determine the success of decision outcomes. Available precedents and adequate resources will be of little help if the amount of time available is insufficient. It is for this reason that time should operate as a moderating variable between the threat factors and decision outcomes.

PHASE I--LABORATORY TESTING OF THE MODEL

Method

Subjects. The subjects were 165 undergraduate and graduate students enrolled at a public university in the Southwest U.S. The average age of the subjects was 23 years and 91 were males and 74 females. 61 of the study participants were used to check for questionnaire readability, clarity, and manipulation of stimulus material, while the remaining 104 were used for purposes of testing the model. Of these 104 students, 35 were education majors and the rest enrolled in an introductory human relation's class. This final sample consisted of approximately equal numbers of males and females.

Procedure and Instrumentation. The stimulus material used to collect questionnaire responses consisted of two case study situations depicting hypothetical problems confronting a high school principal. In each case study, the four threat factors and the time variable were varied to represent extremes of each factor. The first case study described a problem involving a shortage of laboratory supplies and was depicted to create a low threat situation (Appendix A). The second case study involved an impending teacher strike and was intended to create high threat perceptions (Appendix B). Thus, the first situation involved adequate time, resources, experience, high outcome certainty, and low value loss potential, while the second situation was written to present inadequate descriptions of the factors. Both case studies were written by the author and reviewed for clarity and realism by three individuals knowledgeable about the high school principalship. The order of presentation of the cases was counterbalanced.

After reading each case study, subjects were instructed to respond to a questionnaire concerning the content of each case (Appendix C). The questionnaire consisted of 20 randomly-ordered questions, with four questions designed to measure each of the four threat factors and the time variable. Five response alternatives were provided for each item, ranging from Strongly Disagree (1)

to Strongly Agree (5). The four outcome variables were also measured on a five-point scale (1 = Not at all likely; 5 = Very Likely). In addition, two variables were included to serve as supplemental measures: 1) perceived over-all threat (1 = No threat at all; 5 = Very high threat), and 2) likelihood of decision effectiveness (1 = Not at all likely; 5 = Very likely). All participants were assured that their responses would remain anonymous.

Analysis of Data. The following analyses were performed to test the model:

1. Manipulation check of the mean differences between the two case studies or each of the threat factors, outcome, and supplemental variables.
2. Internal-consistency reliabilities (Coefficient Alpha) of the five threat factor scales.
3. Factor analysis (principal components with varimax rotation) of the 20 threat factor items (four items for each of the five factors).
4. Step-wise multiple regression analyses between the threat factors and supplemental and outcome variables.
5. Partial correlations (controlling for the time factor) between the threat factors and supplemental and outcome variables.
6. Model testing using the following different combination of the threat factors:
   (a) Mixed: (RES + EXP) x (OC + VLP)
   (b) Multiplicative: RES x EXP x OC x VLP
   (c) Additive: RES + EXP + OC + VLP

Results and Discussion

Manipulation Check

Paired t-tests were computed for the threat factors and supplemental variables to assess the experimental manipulation of the case studies. Results of this assessment are presented in Table 1. It is evident from Table 1 that all of the manipulations apparently were successful. Case 1 was characterized by perceptions of significantly more time, resources, experience, outcome certainty, likelihood for decision effectiveness and less value loss potential and over-all

Table 1
Means, Standard Deviations, and
t Values of Case Studies (n = 104)

Variable	Case 1 Mean	Case 1 SD	Case 2 Mean	Case 2 SD
Time	3.61**	.74	2.56	.75
Resources	3.00*	.58	2.78	.50
Experience	3.74**	.46	2.13	.69
Outcome Certainty	3.39**	.54	3.15	.54
Value Loss Potential	3.17**	.77	4.72	.40
Threat Amount	2.53**	.79	4.49	.75
Decision Effectiveness	3.76**	.77	3.23	.81

* $p < .01$ df = 103
** $p < .001$

amount of threat, than seen in Case 2. All of these differences are in the direction expected.

Scale Reliabilities

The mean scale reliabilities (coefficient Alpha) for the five threat factors were as follows: time (.74), resources (.42), experience (.43), outcome certainty (.30), and value loss potential (.75). Although the reliabilities for time and value loss potential exceed Nunnally's (1967) criterion of .5 to .6 for preliminary testing of instruments, reliabilities for the other factors are problematic. The fact that only four questions were used for each factor may be one possible explanation.

Another explanation for the lower reliabilities may be restriction of range for these three factors. Examination of the data reveals that this restriction is evident. The score ranges for time and value loss potential are more heterogeneous than the ranges for the other factors with lower reliabilities. Since more homogeneous scores will decrease reliability coefficients (Downie & Heath, 1974), it may be that subjects were unable to greatly differentiate between the stimulus material presented in the two cases.[2] It is difficult to determine at this point if the lower reliabilities can be attributed to the case studies themselves, wording of the questions, both the case studies and questions, or other sources of measurement error. Nevertheless, the remaining analyses must be viewed with caution.

Factor Analysis

Factor analyses (principal components with varimax rotation) were performed for each case study using the 20 item questionnaire (N = 104). These analyses yielded a seven factor solution. Upon inspection of the loadings matrices, the first five factors for each case were selected for further interpretation and

[2]This particular observation raises the issue of statistical versus practical significance, since statistically significant differences were obtained for all of the threat factors.

analysis. These factors account for 88% and 86% of the variance in the pattern matrices, with the first factors for each case accounting, respectively, for 40% and 37% of the variance. Results of the item loadings for each case study are presented in Table 2.

The factor solutions obtained for both cases appear to be relatively clean for the item loadings. Using a criterion of loadings greater than $\pm$ .40, two rather distinct factors are produced across both cases, but especially in Case 2. The order of these factors (time and value loss potential) is reversed for each case.

Inspection of the loadings for Case 1 reveals that the time factor (factor 2) seems to be factorially complex, with moderate loadings both on factors 2 and 3 for item 3 (and also on item 4 which is just below the criterion cutoff). Factor 2 also loads moderately on one item (item 14) pertaining to outcome certainty. Factor 3 loads moderately on time (item 3), resources (item 8), and experience (item 12), while factors 4 and 5 seem to be more homogeneous with loadings on experience (items 10 and 11) and resources (items 5 and 7) respectively.

Based upon item content it is possible to assign tentative labels to these factors obtained for Case 1. Factor 1 can be labeled Value Loss Potential, as originally conceived. Factor 2, however, has been tentatively labeled Urgency, to reflect the possible joint contributions of time and outcome certainty. The remaining three factors all possess elements pertaining to resources. Based upon the content of items loading on these factors, factor 3 has been labeled Response Differentiated Resources; factor 4, Stimulus Undifferentiated Resources; and, factor 5, Response Undifferentiated Resources. The stimulus and response components of crises seem to be reflected in these factors.

The pattern of loadings in Case 2 appears to be somewhat more clear-cut. The five factors have been labeled, respectively, Time, Value Loss Potential, Outcome Certainty, Response Resources, and Stimulus Resources. It should be

Table 2

Factor Loadings for Cases 1 and 2

		Case 1 Factor loading					Case 2 Factor loading				
	Item	1	2	3	4	5	1	2	3	4	5
1.	T(a)	-.02	.84*	.03	.11	.07	.53*	-.02	.31	.08	.08
2.	T(b)	-.10	.57*	.18	.16	.04	.79*	-.01	.19	.09	.08
3.	T(c)	-.09	.40*	.49*	-.05	.35	.67*	-.05	-.01	-.05	.20
4.	T(d)	-.12	.49*	.39	.19	.16	.55*	-.14	-.18	.11	.04
5.	R(a)	-.05	.17	.08	-.19	.51*	.08	.02	-.01	.84*	-.01
6.	R(b)	-.17	.15	.10	.21	.17	.28	-.11	.00	.14	.19
7.	R(c)	-.14	-.01	-.09	.07	.61*	.17	.08	.03	.27	.20
8.	R(d)	.04	.21	.51*	.08	.12	.37	.02	.19	.17	.25
9.	E(a)	.02	-.15	.23	-.02	-.07	.01	-.04	-.21	-.14	.35
10.	E(b)	-.20	.08	.09	.53*	-.13	.23	.35	.07	.19	.51*
11.	E(c)	.01	.20	.01	.79*	.02	.29	-.17	.32	.22	.37
12.	E(d)	-.11	-.06	.55*	.03	-.19	.15	-.16	-.07	.08	.65*
13.	O(a)	-.03	.27	-.05	.01	.02	-.20	-.01	.05	.12	.08
14.	O(b)	-.24	.54*	.02	.15	.02	.09	.09	.81*	-.02	-.06
15.	O(c)	.01	.11	.05	.06	.08	-.04	.07	.02	.04	.06
16.	O(d)	-.11	.01	.31	.10	.02	.06	.09	-.03	.04	-.04
17.	V(a)	.34	.11	-.14	.20	-.21	-.04	.42*	-.07	.10	-.38
18.	V(b)	.68*	-.12	-.03	-.04	-.08	-.03	.76*	.11	.08	.00
19.	V(c)	.87*	-.16	.03	-.16	.02	-.12	.74*	.01	.01	-.11
20.	V(d)	.74*	-.14	-.11	-.19	-.17	-.01	.62*	.01	-.05	-.12

Note: T = Time; R = Resources; E = Experience; O = Outcome certainty; V = Value loss potential.

*Indicates loadings greater than $\pm$.40.

The original items were randomly ordered in the questionnaire and are clustered here for clarity.

noted that the order of the item loadings on the factors in Case 2 differs from that obtained for Case 1. For example, Value Loss Potential, (factor 1 in Case 1) accounts for 40% of the variance while factor 1 in Case 2 (time) accounts for 37% of the variance. However, the first two factors in both case studies (Time and Value Loss Potential) account respectively for 57% and 58% of the total variance. Apparently, both of these factors are strongly involved in descriptions of threat situations, with their ordering somewhat dependent upon the type of situation described. Clearly, additional conceptualization of the other factors (Resources, Experience, and Outcome Certainty) will be required before the instrument designed to measure the factors should be used in actual practice.

Multiple Regression Analysis

Using the original data, step-wise multiple regression analyses were performed for both case studies to determine the best ordering of predictors for the outcome and supplemental variables. For these analyses, the averages of each of the five threat factors were used as predictor variables. Due to the moderate reliabilities obtained for these factors and the nature of the factor analysis patterns, caution must be observed in interpretation. Only the multiple R's and R^2's are reported for variables judged to be the "best" predictors (using the criterion of an R^2 change value of $< .02$). These results are reported in Table 3.

In general, the predictors in Case 1 appear to account for an overall greater percentage of the variance in the criterion variables than do the predictors in Case 2. Although several possibilities exist that might explain this difference, the most likely one might be more qualitative than quanitative. From comments gathered after the questionnaire administration, many subjects reported some difficulty in relating responses to question items with the stimulus material presented in Case 2.

Table 3

Regression Analysis for Cases 1 and 2

	Outcome Variables	"Best" Predictor Case 1	"Best" Predictor Case 2	MR Case 1	MR Case 2	R^2 Case 1	R^2 Case 2
1.	Eliminate	O,V,T	R,O,V	.57	.28	.32	.08
2.	Reduce	T,V,O	V,R,O	.47	.26	.23	.07
3.	Unchanged	O,V,R	T,V,R	.36	.19	.13	.04
4.	Increase	V,T,R	V,T	.47	.17	.22	.03
	Supplemental Variables						
1.	Threat Amount	V,T	E,V,T	.45	.46	.20	.21
2.	Decision Effectiveness	T,E,V	T,O,R	.49	.33	.24	.11

Note: T = Time; R = Resources; E = Experience; O = Outcome Certainty; V = Value Loss Potential.

Although the experience factor was not (statistically) a major predictor pertaining to the likelihood of decision outcomes, it did appear to be related to the supplemental variables. However, the most noticeable finding concerned the apparent stimulus and response components of the supplemental variables. The amount of threat seems to be associated with the stimulus aspects of a crisis, while decision effectiveness seems to be related to response aspects. From the regression analysis, value loss potential is the major predictor of threat amount (when coupled with experience in Case 2) and time is the major predictor of the likelihood of decision effectiveness. Both of these findings are somewhat consistent with what would be expected, although the results are far from being clear-cut.

Partial Correlations

To test for the predicted moderating influence of the time factor, zero-order and partial correlations were computed between each of the threat factors and the outcome and supplemental variables. The coefficients for these computations are presented in Table 4. In general, the results support the moderating effect of time, although the effect seems to be greater for Case 1 than for Case 2. For the individual factors, the results are strongest for resources and outcome certainty. Overall, holding time constant tends to depress the relationship magnitudes as would be expected.

Model Testing

As discussed previously, response- and stimulus-perceived threat are conceptualized as being multiplicatively related, with the factors within threat components being additively combined. This particular model can be described as the mixed model $[(R + E) \times (O + V)]$. At least two other models for combining the factors are possible: 1) multiplicative, and 2) additive. In the multiplicative model, factors are multiplied by each other ($R \times E \times O \times V$);

Table 4

Relationships Between Threat Factors and Outcome and Supplemental Variables Controlling for Time

Outcome Variables		Zero-Order Case 1	Zero-Order Case 2	Partial Case 1	Partial Case 2	Difference Case 1	Difference Case 2
Eliminate:	R	.18*	.23*	.03	.19*	.15	.04
	E	.16***	.10*	.09***	.06*	.07	.04
	0	.44***	.17	.30***	.18	.14	.01
	V	-.39	-.07	-.32	-.05	.07	.02
Reduce:	R	.29***	.13	.17*	.13	.12	.00
	E	.21***	-.06	.15*	-.08	.06	.02
	0	.32***	.14*	.17**	.14*	.05	.00
	V	-.32	.19	-.25	.20	.07	.01
Unchanged:	R	.01	-.01	.11	.06	.10	.05
	E	-.14**	-.03	-.09*	.03	.05	.00
	0	-.28**	-.04	-.19*	-.06	.09	.02
	V	.24	-.04	.18	-.07	.06	.03
Increase:	R	-.05*	.02	.05	-.02	.00	.00
	E	-.18*	.05	-.14	.03	.04	.02
	0	-.17***	-.04*	-.06***	-.04	.11	.00
	V	.43	-.16	.39	-.15	.04	.01
Supplemental Variables							
Threat:	R	-.17*	-.24***	-.11	-.15***	.06	.09
	E	-.05	-.38	-.02	-.32	.03	.06
	0	-.05***	-.01***	.04***	-.03***	.01	.02
	V	.44	.33	.41	.31	.03	.02
Decision Effectiveness:	R	.21**	.23**	.07*	.15	.14	.08
	E	.24*	-.02	.18	-.11*	.06	.09
	0	.22**	.16	.03*	.18	.19	.02
	V	-.26	.04	-.17	.08	.09	.04

Note: R = Resources; E = Experience; 0 = Outcome Certainty; V = Value Loss Potential.

* $p < .05$
** $p < .01$
*** $p < .001$

in the additive model, factors are simply summed together (R + E + O + V). To test these models, the outcome and supplemental measures were correlated with the three different combinations of factors. The results are shown in Table 5.

In terms of significant correlations, the particular model used appears to make little difference among the relationships described. In fact, the models themselves are all highly intercorrelated ($p<.001$), suggesting that a particular combination of factors is not all that important.

Table 5 also reveals that the relationship of the models with the outcome and supplemental variables varies as a function of the case study used. That is, the outcome or supplemental variables are related to the degree of threat present in the case studies. Thus, the four threat factors (irrespective of the model used) are significantly related to eliminating threat only in the high threat situation (Case 2) and related to reducing threat in the low threat situation (Case 1). The factors were not seen, however, as being at all related to no change in the situation or to an increase in threat. For the supplemental variables, the threat factors were significantly correlated with the over-all amount of threat and decision effectiveness except for Case 1 involving the amount of threat. These results are in the direction that would be predicted in that the more resources, experience, outcome certainty and the less the value loss potential (reversed for computational purposes), then the less the perceived amount of threat and the greater the perceived likelihood of decision effectiveness.

Summary of Results

The results for Phase I can be summarized as follows:

1. The manipulation check revealed that the means of the variables used in the low and high threat case studies were significantly different. Thus, the variable manipulations apparently were successful.

Table 5
Correlations Between Models and Outcome/Supplemental Variables

	Outcome Variables								Supplemental Variables			
	Elim.		Red.		Unchgd.		Inc.		Threat		Dec.Eff.	
Model Case:	1	2	1	2	1	2	1	2	1	2	1	2
Mixed	.12	.23**	.19*	.12	-.01	-.05	.12	-.02	-.02	-.29***	.34***	.30***
Multiplicative	.10	.26**	.19*	.11	0	-.07	.13	0	.04	-.39***	.26**	.20*
Additive	.10	.23**	.18*	.16	-.02	-.06	.12	-.04	-.12	-.32***	.41***	.29***

*p < .05
**p < .01
***p < .001

2. The obtained scale reliabilities (Coefficient Alpha) for time, resources, experience, outcome certainty, and value loss potential were only moderate. The highest reliabilities were obtained for time (.74) and value loss potential (.75).
3. Results of the factor analysis were mixed. Although time and value loss potential emerged as relatively clear-cut factors across both case studies, the other factors seem to be more factorially complex. In particular, the resources variable seems to be characterized by components of time and experience, in addition to the items used to assess the available resources. Furthermore, the pattern of factor loadings was more clearly defined for Case 2 than they were for Case 1.
4. Using step-wise multiple regression analysis, the predictor variables account for more variance in the supplemental and outcome variables for Case 1 than they do for Case 2. In addition, the ordering of the predictor variables varied, depending upon the specific criterion variable used. There was no consistent ordering pattern evident.
5. Results of the partial correlations (controlling for time) indicated that time has a moderate (although inconsistent) tendency to depress the relationships between the threat factors and the supplemental and outcome variables. The effects of controlling for time were more pronounced for Case 1 using the outcome variables and were particularly evident for both cases when correlating over-all threat and the threat factors. Thus, time does appear to have the predicted moderating effect.
6. Testing of mixed, multiplicative, and additive models produced no differences across the three models. All of the models appeared to be equally related to the outcome and supplemental variables.

CONCLUSIONS

In general, the results of the laboratory study produced only partial support for the model. The major difficulty in obtaining full support would seem to stem from reliability problems arising from construction of the instrument used to measure the four threat factors. Because only two of the factors achieved acceptable internal consistency, the remaining analyses were undoubtedly affected by measurement error. In addition, the factor analysis indicated that the conceptualization of the resources variable might have been too simplistic. It appeared that the subjects were unable to differentiate resources as a global construct from resources as a specific component. In particular, since both time and experience are resources, a reconceptualization of this variable would seem to be in order.

The results obtained for the model testing were similar to those found by Hackman and Oldham (1975) in testing their Job Diagnostic Survey (JDS), an instrument designed to measure job characteristics. The crisis model depicted in Figure 1 uses a framework similar to that used for the JDS: a cluster of factors is hypothesized to lead to intervening psychological states and then to specific outcomes. The relationship between the factors and outcomes is then predicted to be influenced by a moderating variable (growth need strength in the JDS and time in the crisis model). Although there is no valid reason to suspect that there should be any similarity between the two models other than a similarity in structure, it is interesting to note that, for both models the manner in which the factors are combined is seemingly unrelated to their degree of association with the outcome variables. In the present study, however, the lack of difference between models could be partially attributable to measurement problems.

The one aspect of the model that was not really tested was the response elements of a crisis. The case study approach is more appropriate for looking

at the stimulus aspect, in that this refers to the threat perceived to be created by the problem situation. Thus, it was relatively easy to obtain measures of threat perception from the case studies. The response aspects of a crisis, in contrast, are much more difficult to measure since they involve the actual process of dealing with a crisis situation. Although the interviews used in the field study (Phase II) should shed some light on this matter, there are two approaches that might merit future research. To study crisis processes, an organizational simulation could be designed or, perhaps, such a simulation might be combined with observations in an actual organization. Either way, both the stimulus and respons components could be more reliably assessed.

Although the case study approach used in the present study has obvious limitations, it has provided some preliminary data that should be extremely valuable for additional research. Consistent with one of the purposes of this study--developing an instrument to measure factors in a crisis situation--new knowledge has been acquired to assist in additional studies. Specifically, the conceptualization of the resources variable and the problems observed in measuring it, suggest one avenue for developing measuring instruments. A starting point would be to assume (hypothesize) that the response aspect of a crisis is directly associated with the resources variable (although not as originally conceptualized in this study). The process of dealing with a crisis should probably be broken down into specific resource elements that would receive different weights for different situations. For example, such variables as time, experience, money, information, materials, etc. all should be included as separate measures of resources during a crisis situation.

PHASE II--FIELD STUDY

This phase of the project was designed primarily to explore the process of dealing with a crisis. While Phase I was involved in looking at the stimulus aspects of a crisis, Phase II will look at the response aspects. To accomplish this, the crisis problem solving process was divided into four main stages: 1) analyzing the situation, 2) searching for, evaluating, and selecting solutions, 3) implementing a solution, and 4) the outcomes or by-products associated with solution implementation. Questions were then developed for each of the stages and are presented in Table 6.

To gather data about these stages, it was decided to conduct interviews with school principals to gain their perceptions of how they have dealt with crisis situations. Although this approach obviously is inferior to on-site observations, it was considered to be the most practical approach given limited resources and the exploratory nature of the study. In interpreting the findings that follow, however, it must be noted that any conclusions will be subject to such limitations as respondent recall ability and any interviewer-interviewee interactions that might distort the validity of the data.

Method

Subjects. The subjects for the study were elementary and secondary principals located in a medium-sized city in the Southwest U.S. From an original pool of 20 principals, nine were selected for interviews on the basis of their availability or consent to be interviewed. Five of these principals were males and their average tenure in the principalship was 9.33 years (SD = 8.75). Eight of the principals (four males and four females) worked in elementary schools with an average enrollement of 394 pupils (SD = 113.91) and the secondary principal worked in a school with an enrollment of 350 pupils. Across all of the schools, the teaching staff FTE was 21.76 (SD = 4.68).

Procedure. After constructing the interview schedule, pilot interviews

Table 6

Interview Content Areas

I. Analyzing the Situation

A. Who defined the situation as a crisis?
B. To what extent was the crisis expected?
C. How much relevant information was available at the outset for dealing with the crisis?
D. What was the initial estimate of the severity of the crisis?
E. Did other persons help in evaluating the situation?
F. What other persons were used to evaluate the situation?
G. To what extent were each of the five threat factors (time, resources, experience, outcome certainty, value loss potential) present in the situation?
H. Overall, how threatening was the crisis?

II. Searching for, Evaluating, and Selecting Solutions

A. Were routine or nonroutine procedures used to deal with the crisis?
B. Were solutions considered simultaneously or one at a time?
C. How much time was spent in searching for, evaluating, and selecting a solution?
D. How difficult was it to select a solution?

III. Implementing a Solution

A. What was done to make sure that the solution selected would be successful when implemented?
B. How was information on implementing the solution communicated to others?
C. Who implemented the solution?

IV. Solution Outcomes and By-Products

A. What effect did the solution (once implemented) have upon the crisis?
B. Were any subsequent decisions required after the initial one?
C. Did the problem solver benefit from the situation such that he or she would be better prepared to deal with future, similar problems?
D. Would the problem solver do anything differently after having dealt with this crisis?

were held with three persons to evaluate the clarity of the questions and to solicit any other information that might be helpful in conducting the interviews. These individuals were: a university administrator, a director of a social services agency, and a captain in the U.S. Air Force. After analyzing the results from these interviews, a final interview schedule was constructed and arrangements made to conduct the interviews with the principals.

The interviews were set up by: 1) obtaining permission from the superintendent's office to conduct the interviews, 2) writing a letter to the pool of principals explaining the nature and purpose of the interviews, and 3) telephoning the principals and setting up a date and time for conducting the interviews.

All interviews were conducted in the offices of the principals. The interviewees were told that the purpose of the interview was to study the decision processes used by school administrators to solve various problems they face--especially problems considered to be crises. The principals were told that they should avoid using any names, feel free to decline answering any questions, and assured that all of their responses would remain confidential. In addition, the principals were informed that they would receive a summary of the findings from the project. Before any questions were asked, the principals were asked to briefly describe a decision making situation that they had encountered in their current position, preferably within the last year. The interviews lasted about 45 minutes each, with the shortest about 35 minutes in length and the longest slightly over one hour. All of the interviews were completed within a period of one month.

Instrumentation. The final interview schedule contained 33 questions (Appendix D) designed to tap the content areas described in Table 6. (Because the responses to some of the questions yielded responses that were specific to a particular situation and not amenable to analysis, the final results are limited to the questions reported in Table 6.) When possible, a quantitative

response format with a ten-point scale was used to record answers. For these items, a "1" was used to indicate the low end of the scale and a "10," the high end. Responses to the remaining questions were open-ended and, during the course of an interview, generally followed by probing or clarifying questions. All responses were recorded directly on the interview schedule.

Results

A synopsis of the crisis situations discussed during each interview is presented in Appendix E. With one exception, all of the crises identified involved other people, either internal or external to the school. The following topical headings were assigned to the nine different crisis situations:

1. A Problem Student
2. Conflicting Responsibilities
3. Dismissing a Teacher I
4. Dismissing a Teacher II
5. A Pornographic Magazine
6. Parents Revolt Against an "Open" School
7. Disagreement Over a Child's Reading Ability
8. A Staff Development Program
9. Severe Storm Warning

Perhaps the most interesting result was the diversity of the crises and the responses to them. The diversity in type of crisis is reflected in the topical headings; the diversity in response is more clearly evident when the variability of the responses to the quantitative questions is examined. The responses to all of the interview questions are reported next, according to the content areas.

I. Analyzing the Situation

In five of the situations, someone other than the principal was first to define the situation as a problem. In three of these cases, the problem defining

was done by teachers and in the other two cases, by parents with children in the school. Across all of the cases, the problem was only moderately expected ($\bar{X}$ = 4.89; SD = 3.92), with four principals reporting that they had too little problem information at the outset, four reporting just the right amount of information, and one with too much information. In addition, the principals rated the initial severity of the problem as relatively high ($\bar{X}$ = 6.78; SD = 2.68). When asked to indicate if other persons were used to evaluate the situation, eight of the nine principals responded affirmatively. The persons used to evaluate the situation, however, varied in relation to the type of problem and who was perceived to possess the most relevant information. Teachers were consulted six times, the superintendent three times and school counselors, parents, the school board, and the principal's secretary, one time each (in some cases, more than one of these persons was consulted).

The perceptions of the principals, when asked to rate the threat factors and the overall amount of threat in the situation, are presented in Table 7. It appears that the situations, on the average, were described as only moderately threatening to the principals. The amount of resources available seemed to be most problematic, although the nature of the sample prohibits testing for statistical significance. As indicated by the standard deviations, there is considerable variability among the different cases described for all of the variables.

To provide a rough test of the ability of the threat factors to predict the overall amount of perceived threat, the ratings for each case study were converted into the threat index described in Phase I. Since it was found in the laboratory experiment that the combination of factors is irrelevant in predicting threat, the mixed model was arbitrarily chosen, where $T_i = (E + R) \times (O + V)$. That is, the amount of threat is a function of experience plus resources times outcome certainty plus value loss potential. The ratings for each case study were then computed. The obtained totals ranged from 78 to 198 with a mean

Table 7

Means and Standard Deviations for Threat Factors

Variable	Mean (n = 9)	SD
1. Time Available	6.55	3.43
2. Experience Availalbe	5.00	2.87
3. Resources Available	6.44	3.28
4. Outcome Certainty	6.55	2.70
5. Value Loss Potential	6.22	3.53
6. Overall Threat Amount	4.44	3.13

of 139.33 and a standard deviation of 35.42 (Note: the lower the number the higher the threat. The minimum possible score is 4 and the maximum 400). These scores and the ratings for the overall amount of threat were then rank-ordered and correlated using Spearman's rho. The resulting coefficient was .63 which, for N = 9, is significant at the five percent level. This finding suggests that the amount of perceived stimulus and response aspects of a situation (as measured by the threat factors) are positively related to the overall amount of threat. Thus, the more resources, experience, outcome certainty and the less value loss potential, then the lower will be the overall amount of perceived threat, as would be predicted.

II. Searching for, Evaluating, and Selecting Solutions

Almost by definition, a crisis situation requires atypical response methods. Routine, programmed procedures used to solve day-to-day problems are seldom perceived to be adequate for crisis situations. As a result, most crises require the use of more nonroutine procedures that often are developed as the problem solver proceeds to deal with a crisis. Of the nine principals interviewed, eight stated that they used nonroutine or a combination of nonroutine and routine procedures to deal with their crisis situation. Those who reported using a combination of procedures did so for two different reasons. In one set of situations, routine procedures were used to deal with the problem and nonroutine procedures used to deal with individuals (e.g., Case Study 5, Appendix E); the second type of situation was where routine procedures were initially attempted, found to be inadequate, and then nonroutine procedures developed as time became critical or the situation worsened. In Case Study 1, for example, the principal used standardized methods to deal with the disruptive child for several years until his behavior became so bad that special measures were taken (e.g., developing special activities and time periods for the child). The one principal who reported using routine procedures to deal with an externally imposed crisis

(Case Study 6), indicated that the usual procedure for any severe problem situation in her school was to conduct group problem solving meetings with the persons involved.

When asked if they considered solutions one at a time or several at the same time, six principals reported that they considered several solutions at the same time and three reported using sequential evaluation. Several of those who indicated that they used simultaneous evaluation reported that all of the possible solutions seemed "obvious."

When averaged across respondents, the actual time reported in searching for, evaluating, and selecting a solution was equal for all three activities ($\bar{X}$ = 6.89; SD = 2.57, 2.03, and 1.90 respectively), although there was some variation within individuals. On the average, then, the respondents spent considerable time in trying to develop a solution--a fact also supported by verbal comments. The average difficulty involved in selecting a final solution, however, was only moderate ($\bar{X}$ = 4.44; SD = 2.92). Apparently, the time spent in solving a problem was justified by the relative ease involved in making a final solution.

III. Implementing a Solution

Once a solution has been selected and implemented, there often will be additional activity required to insure that the selected solution will be able to successfully resolve the problem. This activity, known as stabilization (Schein, 1970), involved a variety of activities specific to the problem being dealt with. In most instances, this meant holding discussions with the persons responsible for implementing the decision. In addition, the content of most of these discussions involved justification statements, in which the principals attempted to explain the rationale for selecting the solution they did. When asked to rate their degree of success in stabilizing a solution, the principals were uniformly confident in their success, with an average rating of 8.22 reported

(SD = 1.92).

When it came to implementing a solution, the method most frequently used to communicate information was by verbal interaction. Seven of the principals reported that they verbally transmitted this information, while only two did so in writing. The actual implementation of a solution was predominately carried out by the principals themselves (6), with teachers, a secretary, and the superintendent used for the three situations in which the principal was not directly involved in implementation.

IV. Solution Outcomes and By-Products

In describing the problem they dealt with, the principals were asked to indicate if their solution eleiminated, reduced in magnitude, had no effect, or increased in magnitude the crisis situation. Five of the principals stated that the crisis was reduced in magnitude, three said that it was eliminated, and one indicated that the crisis actually increased in magnitude.

The initial solution to a problem is often not successful in completely resolving it--as evidenced by the fact that only three of the principals believed that their solutions eliminated their problems. Frequently, it is necessary to make additional decisions after the initial solution has been implemented. In the present study, five of the principals indicated that they did have to make additional solutions while four stated that they did not. In some cases this involved follow-up actions; in others, a recycling of the search for, evaluation, and selection of solutions; and, in still others, additional justification to insure the stability of the solution.

When asked if they would be better able to deal with future, similar problems having dealt with this one, the principals were unanimous in their agreement. All nine principals reported that going through the process involved in dealing with their crisis situation would make it easier for them to develop and apply the solution to a similar situation.

The final interview question asked of the principals was whether or not they would have done anything differently, if they had the opportunity to deal with the crisis again. Seven principals said they would and two said they would not. In several cases--those involving dismissals and problem students, the principals reported that they would have made a decision much sooner than they actually did.

Discussion and Conclusions

One difficulty in interpreting the interview results, stems from the fact that some of the crisis situations occurred several years prior to the time of the interviews. What effect this had on the reliability of the data reported is unknown. Although unpleasant events might be either repressed or become more vivid over time, there is little way to know how the prinicipals in this study reacted. Perhaps, because they were given a chance to recall a situation in advance of the interview, their recall might have been better than if they were asked to discuss a situation without an opportunity to collect their thoughts. From a purely subjective standpoint, most of the principals seemed to have little difficulty in recalling specific details, especially in response to questions that might have prompted their memory.

The major limitation of the study, however, probably lies with its generalizability. The small number of persons interviewed and the use of primarily elementary school principals from only one school district, will severly limit the extent to which the results can be generalized to other populations.

The following discussion will attempt to highlight some of the more interesting findings, speculate as to their significance or reasons for their occurrence, and suggest some direction for possible future research. This discussion will be structured by the content areas used for the different problem solving stages.

A. Analyzing the Situation

1. Most of the crises were originally defined as problems by persons other than the principals. Teachers and parents were most likely to initially define a crisis situation. The principals relied heavily upon these persons to gather information and then develop their own definition of a crisis. Because it is widely recognized (Maier, 1963) that problem definition is one of the more critical stages of the entire problem solving process, most of the subsequent actions used to deal with crises are dependent upon the reliability of this information. In the present study, however, no attempt was made to assess perceptions of information reliability. In view of the efforts made by the principals to secure information to use in defining the problem, this is an area that should be included in future studies.

2. As would be expected, the descriptions of the threat factors for the different situations varied considerably among individuals. In describing the situations, however, there was a similar degree of confidence expressed by the principals to successfully deal with their problem situations. This confidence might have been slightly exaggerated due to the face-to-face nature of the interviews and desires to present a socially acceptable appearance. That is, most administrators might view confidence as being a desired trait of a "good" administrator. While the amount of overall threat averaged out to be moderate, the confidence required to deal with a crisis might be functionally related to specific threat perceptions of specific situations, since such averages do not reveal much across different types of crises. An interesting question for future research would be to ask the persons how they define crises in general and why they would define a specific situation as a crisis in particular. Most of the principals had some difficulty in defining their own situations as crises, indicating that others might have seen the situation differently.

3. As indicated by the .63 coefficient obtained for the relationship between perceived overall threat and the mixed model of the four threat factors, there was some support found for the predictive validity of the threat factors. Again, because of the small sample used, this result must be viewed with considerable caution. What is interesting to note, however, is that in the interviews the rating of the threat factors was accomplished using only one item--in contrast to the four items used for each factor in the laboratory study. It may be that the directness of a question such as, "Before you implemented your first major decision to deal with the problem, how certain were you that it would be successful when implemented?" might provide a more reliable response than using a multi-question approach. Although such an approach could be more vulnerable to faking, this might be offset by potentially higher response validity.

B. Searching For, Evaluating, and Selecting Solutions

1. The high frequency reported for using nonroutine procedures is significant in that it suggests that the crises described were perceived as rare occurrences. The actual perception of what constitutes a nonroutine procedure, however, seems to vary among individuals. Several of the principals--especially those using a routine/nonroutine combination--defined nonroutine methods as those involving interactions with other people. That is, no two people can be handled the same way. Purely administrative procedures, such as notifying the superintendent and keeping him appraised of a situation, were seen as being more routine. Thus, it might be inferred that prescribed administrative responsibilities will be seen as routine and interpersonal activities as nonroutine. While this distinction is rather obvious, there does seem to be some ambiguity as to when a prescribed function might be handled in a more discretionary manner and what, if any, effect discretionary or "quasi-discretionary" activities might have upon perceptions of a situation as being routine or nonroutine. The

distinction is an important one during crisis situations since perceptions of areas of permissible activity could directly affect the outcome of actions taken to deal with a crisis. An avenue of future research might be to compare discretionary and prescribed role perceptions during crises.

2. One of the more interesting findings was the comment made by several of the principals that the situation became more acute over time as they delayed making a decision. This was especially evident in the case involving the problem student (Case Study 1) and the one involving the dismissal of a teacher (Case Study 3). In both cases, the principals tried to be lenient in their behavior to give the individuals involved an opportunity to change. Both of these principals wished that they had taken more drastic action much earlier than they did. These cases can be contrasted with a third case (Case Study 4) where leniency apparently was not possible due to the potential losses that might result if immediate action was not taken.

In all three of these cases, implicit criteria were considered in judging the amount of leniency that would be tolerable in the situation. The two criteria that seemed to be most important in these cases were time and value loss potential. In the cases involving the disruptive student (Case Study 1) and the incompetent teacher (Case Study 3), the amount of time available was judged to be high ("9" and "10", respectively) and the value loss potential, only moderate ("6" and "7"). Thus, if there is time available to try to change the situation and the losses of doing so are not potentially serious, then greater leniency can be tolerated. In Case Study 4, in contrast, the new teacher who began making "unreasonable" demands during the first few days of school, presented a situation that constrained the permissable level of leniency. In this latter situation, the principal involved rated the available time as being a "1" (very little) and the value loss potential as being an "8". The potential effects upon staff morale and the students were seen as

being sufficient to justify a quick decision for dismissal.

Although the other two principals wished that they had acted more decisively, this initial assessment of the leniency criteria constrained their area of decision making freedom. It is, obviously, difficult to second guess someone else in situations such as these. What apparently happened in case studies 1 and 3 was a tendency to give greater weight to the personal development of the individuals involved over the weight of any considerations involving time and potential loss. Viewed this way, the principals behaved in accordance with their value systems and concern for humanistic principles of administrative behavior. It could very well be this basic dilemma between subjective value considerations and objective attributes of a situation that leads many persons into crisis situations. To avoid this dilemma in the two case studies involved one tactic might be to set time limits on behavioral change and then act in relaiton to the more objective characteristics of the situation.

3. It is also interesting to note that most of the principals reported using "optimizing" rather than "satisficing" (Simon, 1957) methods for selecting decisions. That is, most principals stated that they considered several alternatives simultaneously rather than one at a time. Because the optimizing approach is generally considered to result in the highest quality decisions (Simon, 1957), the majority of the principals seemed to be evaluating solutions for selection in the manner that is most acceptable. However, these reports might have been distorted somewhat due to the passage of time. When the various alternatives were originally considered and a final solution selected, it might have been the entire list of tentative solutions that was recalled, regardless of the method used to develop the alternatives. Thus, the reaction that the available solutions seemed to be "obvious" at the time, could simply reflect the end result, overlooking the sequential process that might have been used. This is, of course, speculation and actual observation of the solution selection

process would be required to develop any firm conclusions.

4. For most of the crises described, it was evident that considerable time was spent in dealing with them. From comments made by the principals, a lot of personal effort was also invested in dealing with the situations--especially when that critical point was reached to go one way or another, to dismiss or retain, act or not act, etc. Once the process of searching for and evaluating solutions was accomplished, relatively little time was spent in actually selecting a solution. Again, this report of short selection time could reflect a conscious or unconscious desire to appear as a quick decision maker. This interpretation is probably not accurate, however, given the degree of deliberation that went into selecting most of the solutions. Across all of the principals, there was evidence of a strong commitment to their jobs and a desire to be conscientious in doing them.

C. Implementing a Solution

1. Most of the decisions made required a certain amount of "stabilization" effort to make sure that the solution would have an opportunity to work. In most cases, the principals used justification statements to enlist the aid of others in carrying out the solutions. With only a couple of exceptions, the solutions were at least initially implemented by the principals themselves. All of the principals, however, agreed that they were successful in stabilizing the situations once a solution had been implemented. It would be interesting, nevertheless, to obtain the perceptions of those persons involved in a situation as to whether or not the situation had been stabilized. This would seem to be an area in which contrasting perceptions could exert a great influence on the likelihood of a solution being effective. This could be a sparsely researched area that might benefit from further investigations.

D. Solution Outcomes and By-Products

1. The length of time spent in dealing with a crisis seemed to make little

difference in the eventual outcome. With one exception, once a solution was implemented, the principals described the crisis as being either eliminated or reduced in magnitude. Once there are no more decisions to be made, a crisis can no longer exist. Several of the principals, however, reported having to make additional decisons after their initial one. This would seem to reinforce the process aspects of most crisis situations. Instead of viewing crises as a sequential event with a discrete beginning and end, it is probably better to think of crises as situations involving continual recyclings of the search for, evaluation, and selection of solutions.

2. Perhaps the last significant finding is that seven of the nine principals reported that they wish they had responded differently in dealing with the situations they described. In most of these cases, however, the general feeling seemed to be that there were things that could have been done differently to improve their general way of responding, rather than things that could have directly affected the solution outcome. Although all of the principals viewed their situaions as positive learning experiences, only three regretted handling their situations like they did.

As a final comment, it might be noted that some of the previous interpretations could cast some of the principals into a rather poor light as indecisive administrators. On the contrary, these persons are probably more humane than indecisive. What seems to be most important for persons dealing with crises (or any problems for that matter) is to be able to benefit and learn from experiences so that they might grow both as persons and as administrators. Those persons who can approach a crisis as an opportunity for growth are more likely to benefit than those who see a crisis as an enemy who must be defeated at all costs.

Utilization of Results

The results of this project will be utilized in two ways. First, the project will be re-written for submission as a journal article. Second, an attempt will be made to use the model to develop a training module for school administrators. Such a module would involve the use of different crisis simulations and include use of the in-basket technique as a primary procedural method.

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APPENDIX A

SANDERSON HIGH SCHOOL

Elmville is a community of about 250,000 people with three high schools. You have been Principal of Sanderson High School for seven years, previously having been an assistant principal at Sanderson for three years. Sanderson has a student enrollment of 2,200 students and 75 teachers who have an average tenure at Sanderson of 4.3 years and who have worked as teachers for an average of 8 years.

Because of an eroding tax base in the community, coupled with rising utility costs, the budgets of all three high schools were reduced at the beginning of the school year. For some reason, your school received the most drastic cuts.

It is now the beginning of the third month of the school year. You have just received a memo from the chairperson of the science department in which he indicates that the current budget allotment does not contain sufficient funds to purchase necessary laboratory equipment for the remainder of the school year. As very few students will be affected by the insufficient equipment, the situation does not seem to be serious. The problem does need to be resolved, however, before the end of the school year as some students need the lab course for graduation while many others were planning to take it because it happened to fit into their schedules.

After reviewing student needs in this area, you decide that you will have almost six months to develop a solution, although you obviously would like to solve the problem much sooner.

As an assistant principal you encountered a similar situation about eight years ago. At that time, the problem was dealt with by re-scheduling some students and borrowing equipment from the other high schools. That solution seemed to work pretty well at the time and, after talking with your office personnel and the other principals, it appears that you could successfully implement the same solution now.

APPENDIX B

MIDTOWN HIGH SCHOOL

You are the newly-appointed Principal of Midtown High School located in a city of 600,000 people. Previously, you had been a high school history teacher in another state. During the first four months in your present job, you have noticed that there seems to be ineffective communication channels between the central administration and yourself and the other principals. On several occasions you have been informed of new policy changes by some of your teachers via the "grape vine" well before you have received the same information from central administration through more formal channels.

At the last faculty meeting, the teachers notified you that there was going to be a system-wide strike to protest low wages and lack of professional treatment of teachers by school administrators. The teachers inform you that the strike is scheduled to begin in three days and that they all plan to participate. Furthermore, the teachers report that they are willing to remain on strike for several months until their demands are met.

Later, upon conferring with an assistant superintendent, you learn that a strike is indeed imminent. Although the school system bargaining team is prepared to begin negotiations immediately, they are unsure as to how successful they will be since the strike was totally unexpected and such a situation has never before been encountered in the school system.

You are instructed to begin informal discussions with the teachers in your school to learn about the exact nature of the issues involved and the seriousness of the problem. Based upon your conversation with the assistant superintendent and some of the other principals, you are very concerned about the situation, especially its potential effects upon the students.

APPENDIX C

Situation _____

PART I

Please respond to the following statements by indicating the extent to which you agree or disagree with each statement. Circle the one number for each statement which best reflects your opinion.

		Strongly Disagree	Disagree	Neutral or Don't Know	Agree	Strongly Agree
1.	This particular problem seems to occur quite often	1	2	3	4	5
2.	The major problem faced by the decision maker is not at all similar to previous problems he or she has faced	1	2	3	4	5
3.	It is very important that a decision be made to do something to resolve this problem	1	2	3	4	5
4.	It is rather easy to determine the different outcomes that might be associated with different decisions	1	2	3	4	5
5.	In the past, the decision maker has successfully dealt with a similar problem	1	2	3	4	5
6.	Once a decision is made, it is very likely that it will be successful in solving the problem	1	2	3	4	5
7.	Once a decision is made, there probably will not be enough time remaining to successfully implement the decision	1	2	3	4	5
8.	There is not enough time available to make a high quality decision	1	2	3	4	5
9.	Available resources (money, information, equipment, etc.) do not seem to be very adequate to deal with this problem	1	2	3	4	5
10.	After the decision is implemented, there may be little time left to make adjustments or take corrective action	1	2	3	4	5
11.	It does not seem that adequate "substitute" resources are readily available to use in solving the problem	1	2	3	4	5
12.	Very few people will be seriously affected if an adequate solution to the problem is not found	1	2	3	4	5
13.	The group or organization does not stand to lose very much if the problem is not resolved satisfactorily	1	2	3	4	5
14.	The required resources (money, information, equipment, etc.) can be easily identified and obtained when necessary	1	2	3	4	5
15.	In the past, no other persons in the group or organization known by the decision maker have successfully dealt with a similar problem	1	2	3	4	5
16.	In this situation, it will <u>not</u> be difficult to determine if a decision was correct	1	2	3	4	5
17.	Group or organizational personnel seem to have the necessary skills and abilities required to deal with the problem	1	2	3	4	5
18.	A great deal of time is available before a decision must be made	1	2	3	4	5
19.	Serious consequences could result for the group or organization and the people in it if an effective decision is not made	1	2	3	4	5
20.	No one decision is more likely than another to completely resolve the problem	1	2	3	4	5

PART II

1. After a decision has been implemented, how likely do you believe it to be that the problem will be:

	Not at all Likely	Somewhat Likely	Moderately Likely	Likely	Very Likely
a) Eliminated?	1	2	3	4	5
b) Reduced in Magnitude?	1	2	3	4	5
c) Unchanged?	1	2	3	4	5
d) Increased in Magnitude?	1	2	3	4	5

2. In general, how much threat to the group or organization is presented by the problem?

No Threat At All	Some Threat	Moderate Threat	High Threat	Very High Threat
1	2	3	4	5

3. Please rate each of the following factors in terms of their importance to the decision maker in solving this problem (i.e., which factors need to receive the most importance?).

	Not at all Important	Somewhat Important	Neutral or Don't Know	Important	Very Important
a) the amount of time available in which to make a decision....	1	2	3	4	5
b) the resources (personnel, information, money, equipment, etc.) available to be used in solving the problem.....	1	2	3	4	5
c) the relevant experience of the decision maker or others known to him/her in dealing with similar problems.....	1	2	3	4	5
d) the certainty that a decision will be successful when implemented.....	1	2	3	4	5
e) the possible "loss" to the group or organization if the problem is not satisfactorily resolved.....	1	2	3	4	5

4. Given what you know about this situation, how effective do you think an implemented decision will be in solving the problem?

Not at all Effective	Somewhat Effective	Moderately Effective	Effective	Very Effective
1	2	3	4	5

5. If you were the decision maker described in this situation, use the scale below to indicate the extent to which you would be likely to use routine (i.e., standardized, predetermined) methods to solve the problem.

Not at all Likely	Somewhat Likely	Moderately Likely	Likely	Very Likely
1	2	3	4	5

APPENDIX D

Interview Schedule
Grant No. NIE-G-78-0165
Crisis Decision Making
Oct 78 - Sept 79

Interview#_____
Person Interviewed_____
Position_____
Date_____

I am currently working on a research project funded by the National Instiute of Education, which is an agency in the U.S. Department of Health, Education, and Welfare. The purpose of my research project is study the decision processes used by school administrators to solve various problems they face. I am particularly interested in problems that might be considered "crises".

I would like you to briefly describe a decision making situation (preferably, a crisis situation) you encountered in your current position that occurred within the last year. I will then ask you some questions about this situation.

For conducting this interview, I have established three groundrules:

(1) In responding to the questions, please do not use the names of any persons involved.

(2) You should feel free to decline answering any questions without providing a reason for doing so.

(3) The entire contents of this interview will be kept in strict confidence. At no time will you or the school system be identified in reporting results.

If you would like, I will be glad to provide you with a summary copy of my final results. Do you have any questions before we begin?

1. Who first defined this situation as a problem? Why?
   (or brought it to your attention)

2. When did you first define the situation as a problem? Why?

3. To what extent did you expect this problem to occur?
   1 = Completely Unexpected 10 = Completely Expected

4. When you first encountered the problem, did you have:
a) too little, b) just the right amount, or c) too much
information needed to deal with the situation?
If too little, or too much, how did you try to change the
situation (if at all)?

5. What was your first estimation of the severity of the problem?
Why? 1= Not at all severe 10= Extremely severe

6. What criteria if any did you use in analyzing the problem?
(i.e. what factors did you use in evaluating the problem?)

7. What factor or factors did you consider to be most important in dealing with the situation? Did these factors change over time?

8. Did other persons help or influence you in evaluating the situation? Who?

9. Where or to whom did you go (if anyone) to seek information to evaluate the situation?

10. How much time was available to you to solve the problem?
    1 = Very little 10 = A great deal

11. What information (if any) about the problem did you communicate to others?

12. How did you decide what information should be communicated?

13. Have you or others known to you previously dealt with a similar situation? To what extent was the situation similar?
1 = Not at all 10 = Completely

14. Were your available resources adequate to deal with this situation?
How adequate? 1 = Not at all 10 = Very adequate

15. Before you implemented your first major decision to deal with the problem, how certain were you that it would be successful when implemented? 1= Not at all 10= Very certain

16. In your estimation, how much did the school stand to lose if the problem was not successfully resolved? 1 = Nothing 10 = A great deal

17. In general, how threatening would you say this situation was to you? To others involved? 1 = Not at all 10 = Very threatening

18. Some decision problems are dealt with using routine methodes (i.e., standard, programmed, already-existing methods) while others require more nonroutine, innovative methods. How would you classify your approach to dealing with this problem? Why?

ROUTINE

19. If you used routine methods, how was implementation of your decision communicated to others (if at all)? Communicated by whom? What difficulties were encountered during implementation?

20. As a result of implementing routine methods, do you believe that the problem was eliminated, reduced in magnitude, stayed the same, or increased in severity? Why do you think so?

21. Did this outcome affect any subsequent decisions you might have made in dealing with the problem? If so, how?

22. Did this problem alter the nature or structure of your current routine procedures? If so, how?

NONROUTINE

23. If you used nonroutine methods, were many different solutions considered at the same time or were possible solutions evaluated one at a time?

24. How much time did you spend on the:
    a. search for solutions? 1 = Very little 10 = A great deal
    b. evaluation of possible solutions? 1 = Very little 10 = A great deal
    c. selection of a solution? 1 = Very little 10 = A great deal

25. How difficult was it to select a solution?
    1 = Not at all 10 = Very difficult

26. After search for, evaluating, and selecting a solution did you find that you had to repeat this process? Why? If the process was repeated, how much time did you spend in the:
    a. search for another solution? 1=Very little 10=A great deal
    b. evaluation of another solution? 1=Very little 10=A great deal
    c. selection of another solution? 1=Very little 10=A great deal

27. What, if anything, did you have to do to make sure that the solution selected would be successful when implemented? How successful were your actions? 1= Not at all 10= Very successful

28. Once you decided to implement your decision, how was it communicated to others? Why?

29. How was the decision itself implemented? By whom?

30. As a result of implementing your decision, do you believe that the problem was:
    a) eliminated? Why?
    b) reduced in magnitude? Why?
    c) stayed the same? Why?
    d) increased in severity? Why?

31. After this initial outcome, did you have to make any other decisions to deal with the problem? If so, what decisions?

32. Was the outcome of the decision communicated to others? If so, who?

33. Do you think that you will be better able to deal with future, similar problems having dealt with this one? Why?

34. In looking back at this problem, what, if anything, would you do differently now? Why?

APPENDIX E

Case Study 1 - A Problem Student

An elementary school male student exhibited signs of a severe behavior disorder from the first to fifth grades. The principal had this student in her school during this time and considered the child a physical danger to the other students. The child was first brought to the principal's attention by the classroom teachers. The principal discussed the situation with the classroom teachers, the school system counselor, the assistant superintendent, and the superintendent, all of whom supported her actions in dealing with the child. In a conference with the child's mother, it was revealed that the mother had a very permissive attitude towards disciplining her son. The mother brought a psychiatrist to one of the conferences with the principal and the psychiatrist stated that he would take the principal to court if the child were not permitted to return to school (at this time, during the child's fifth year, the principal had ordered the child suspended until he received psychiatric counseling). Because the student's behavior got worse as he got older, the principal estimated that, right before the child was suspended, the situation consumed almost 50 percent of her time. When the situation initially developed, the principal dealt with it using routine procedures--e.g., visiting with the child and his mother. As the situation worsened, the procedures used became more nonroutine--e.g., setting aside special time periods to deal with the child, involving him in special activities, etc. In general, both the principal and the teachers "bent over backwards" (in the principal's words) to try and deal with the student. Eventually, the situation became so bad that the drastic action of suspension was required. During the time the child was in the school, the principal took notes on specific incidents in anticipation of any action that might be taken on the child in the future. The principal indicated that if she had to deal with the situation over again, she would have attempted to have had the child suspended in the third grade and would have not permitted the situation to drag out another two years.

Case Study 2 - Conflicting Responsibilities

(Before discussing this case, it must be noted that the principal was due to retire one month from the time of the interview. Perhaps because of a tendency to see things in a positive light as she was looking back over her career, she initially stated that she has never experienced any crises. After some probing, the following situation was discussed.)

A major problem that had taken place over the years was the reluctance of the school's resource person to assume any teaching duties at the end of the school year. This person, who was responsible for getting the school's library (media center) in shape for the closing of the school year, felt that this responsibility should exempt her from teaching responsibilities at this time. A problem always developed because the other teachers in the school resented this person's attitude in not wanting to do "her share of the work." The situation has existed for five years and was first brought to the principal's attention during the first year that it happened. According the the principal, the problem's severity would vary from year to year, depending upon how many teachers complained to her. The principal believed that it was her responsibility to make a decision and she decided that the resource person should be exempted from teaching since it was necessary to get the resource center closed for the end of the school year. Although the principal did not consult with others on this problem, other younger principals did come to her for advice on the same problem. According to the principal, a major difficulty in dealing with this problem was a lack of resources, specifically an aid who could assist with the closing procedure. To reduce the severity of the problem, the principal discussed the situation with the other teachers to let them know her rationale for her decision. When asked what she might have done differently to deal with this situation, the principal initially responded, "nothing." After some thought, however, she stated that a possible solution might have been to write up a policy and make it known to the teachers at the beginning of each school year so they would know what to expect--although the principal was not sure if this would be effective since the problem does not really develop until the end of the year.

Case Study 3 - Dismissing a Teacher

For a male elementary school principal, the crisis situation that stood out in his mind was a situation in which he had to fire a teacher that had worked in the school for three years. He first recognized that he had a problem with the teacher during the first three months that the teacher began working in the school. The situation was brought to his attention based upon reports of discipline problems in the teacher's classes, his curriculum preparations, and from statements made by teachers and parents. The principal attempted to give the teacher the benefit of doubt but the situation gradually worsened over time. The principal began to accumulate information about the problem through classroom observations and in discussions with the teacher involved. The principal had previously dealt with similar problems when he worked in the banking business. However, in banking, the criteria for dismissing someone are much more clear. During the three years that the teacher was at the school, the principal initially attempted to improve the teacher's performance by structuring her job for her, but no improvement was evident. The principal described the situation as being routine in his dealings with the school board to have the teacher fired and nonroutine in his interactions with the teacher.The actual decision to fire the teacher took three years because the principal was trying to find a solution to the problem. Near the end of the three year period, the decision to fire the teacher "made itself" since there was obviously no way that the teacher's performance would improve. Once the decision was made to fire the teacher, the principal discussed the situation with the teacher and gave examples of her behavior. The teacher then agreed that dismissing her was probably the best thing to do in the interests of the school. When asked what he might have done differently, the principal indicated that he would have fired the teacher after two years instead of waiting for the third year to pass.

Case Study 4 - Dismissing a Teacher

During the third day of a new school year, a team leader in an open classroom elementary school reported to the principal that her newly-hired co-teacher refused to go on duty. The new teacher went to the principal and started making demands, such as longer lunch hours and other privileges not normally granted to the other teachers. She also demanded to see the superintendent to express to him her demands before she would go on duty. The problem for the principal was that the new teacher, by refusing to start teaching, was disrupting the rest of the school and preventing the students from receiving instruction. During the hiring interview, the teacher had seemed "O.K." and there was nothing to indicate to the principal that there would be problems with this individual. The principal took action by immediately setting up a group meeting with the superintendent and the teachers and parents involved. At the time, a similar situation had not occurred although one did subsequently develop after this situation. The decision made was to dismiss the teacher immediately because of the effect the situation was having on the students and the possible morale problem that might develop with the other teachers if the individual was not dismissed. During the few days that it took to make the decision to dismiss the teacher, three solutions were considered: 1) do nothing and let the teacher stay, 2) have the superintendent personally dismiss her, or 3) an intermediate solution of having a group meeting with the teacher present and try to work out a solution. It was decided that the situation required immediate action, so the superintendent personally dismissed the teacher. This decision was then communicated to the school's faculty by a memo from the principal. When asked what she would have done differently in this situation, the principal stated that she would have been more cautious during the interview and would have immediately brought in a substitute teacher for the children involved.

Case Study 5 - A Pornographic Magazine

An elementary school principal stated that the only crisis situation she could recall during her nine years as a principal was a case where a teacher reported to her that a student was found with a pornographic magazine in his possession. The situation represented a crisis to the principal because she did not really consider the magazine to be "pornographic" but the teacher (a male) demanded that the student be spanked immediately. In addition, the severity of the situation was further heighted by the fact that the principal felt that she had to make a decision on how to deal with the situation in a short period of time. However, the magazine itself was not seen by the principal as a problem since she did not consider it to be "pornographic" and there not really harmful to the child. The principal eventually decided not to spank the child and she notified the teacher who had brought the child to her of this decision later on during a private conversation. Although the principal had dealt with similar problems in the past, she believed that her approach to dealing with the situation was primarily nonroutine. After making her decision, the principal called the principal of the high school where the student had found the magazine and explained the situation to him. She also discussed the possible influences that some of the older students have upon the students in her school. The only thing that the principal would have done differently in this situation would have been to notify the child's parents that he was being held after school (but without mentioning the magazine).

Case Study 6 - Parents Revolt Against an "Open" School

A principal of an open school was presented with a petition signed by parents who thought that the school's approach to teaching their children gave the students too much freedom, was not adequately supervised, and failed to properly discipline the students. The parents wanted more control over how their children were being taught and started a letter writing campaign in the local newspaper in addition to the petition. The principal began dealing with the situation by holding meetings with her faculty every day after school and allowing them to express their feelings and offer solutions. She also invited school board members and the superintendent to attend some of the meetings and, finally, invited the parents to a meeting to learn more about the school's philosophy and the way it operates. At first, the principal was uncertain about how severe the problem was since she did not, at the time, know how well organized the parents were. However, once she started dealing with the situation, she tried to view it as a growth process for all persons involved. Although the situation was not completely resolved, the principal believed that the magnitude of the situation was reduced considerably by conducting the meetings to clarify perceptions and provide information. To the principal, this was a routine situation since her method of operation is to meet with teachers and faculty in group sessions on a regular basis. The only thing the principal would have done differently would be to have one large group meeting with all of the involved parties. In this way, it would have been much easier to clarify information about the problem and thus less likely to result in distortion of information that took place when meeting with the different groups separately.

Case Study 7 - Disagreement Over a Child's Reading Ability

At an elementary school, the children were separated into "fast" and "slow" reading groups. In the 2nd, 4th, and 5th grades, they were given tests to assess their reading progress. One child who was in a 4th grade "slow" group, received an exceptionally high score on the reading test. When the score for this child was sent to the parents, the mother became very upset and went to the principal, "screaming" that the school was to blame for the child being held back from progressing in her reading ability. The mother demanded that the child be immediately moved to the "fast" reading group. In the opinion of the child's teacher, however, the child was not really performing any higher than her placement in the "slow" group would justify. When first confronted by the mother, the principal stated that he screamed back at her and lost his temper--something he said that he had never done in all of his years as a principal. After this initial meeting, the principal called the mother, apologized, and then met with her four or five times to try and work out a solution. The principal also met with two other teachers to discuss the situation. It was agreed to move the child to the "fast" group, although it was realized that this could creative additional problems with other parents who also might want their children moved. To stabilize this situation, the principal held weekly meetings with the child's mother and developed guidelines for justifying any approaches used to give a pupil special treatment. (In addition to spending part of the time in the "fast" group, the child also received individualized instruction). In looking back at the situation, what seemed to bother the principal the most was the fact that he lost his temper with the mother, instead of allowing her to express her feelings.

Case Study 8 - A Staff Development Program

In his first year as an elementary school principal, the principal determined that his staff was very democratically-oriented in how to run things while the central administration seemed to be more authoritarian. In the past three years, there had been three different principals in the same school, and all of them had apparently left because of difficulties in dealing with the central administration. The principal also determined that there seemed to be somewhat of a staff morale problem and decided that a staff development program might help. To begin working on this problem, the principal invited a professor from a local university to come in and evaluate the school's program for a period of one month. The professor concluded that the school seemed to be lacking in goals and objectives and recommended a staff development program. The principal then went to the assistant superintendent and asked if he would be permitted to develop such a program. The assistant principal said that the principal would not be allowed to do the program. However, the principal decided to proceed anyway. The principal visited two other school systems to determine how he might set up a program that involved more staff participation in decision making. In evaluating his problem of how to implement the program, the principal considered three things: (1) what would be the effect of the program upon the students, (2) the logistical problems involved in setting up the program, and (3) how soon would he be "called on the carpet" by central administration for trying to set up the problem. (As it turned out, the principal never did get into trouble with the central administration because of his support from the other teachers). It is interesting to note that this principal felt that his program would be successful when implemented (a rating of 10) because he was doing it alone and would be considered a martyr. To stabilize the situation, the principal spent a lot of time in trying to achieve consensus among the teachers in the school system that the program would be worthwhile. When asked what he might have done differently, the principal indicated that he would have paid more attention to "theory base" in setting up the program. As it was, his method of operation was more "seat of the pants."

Case Study 9 - Severe Storm Warning

A high school principal was faced with the problem of dealing with a severe storm warning that was issued about 40 minutes before school was to be dismissed for the day. The major problem was that parents began driving to the school to pick up their children as soon as the warning had been issued. In doing this, they parked in the middle of the street, effectively blocking it and preventing the students from being easily evacuated from the school if necessary. This situation became a problem for the principal as soon as the parents began arriving at the school (about 10 minutes after the warning). Although there were specific evacuation plans (routine procedures) they would not be usable because of the cars blocking the street. The major activity of the principal at this time was receiving and transmitting information; his secretary tried to keep him appraised of storm information and the teachers tried to keep the students under control. Although the principal believed his resources (c.f., people) were adequate to deal with the situation, the problem was how to best use the resources in the time available. The principal also indicated that he felt in somewhat of a dilemma because he was concerned about the safety of the children but did not want to create a public relations problem with the community by not allowing the parents to pick up their children. The principal was confident that the situation would be effectively resolved since he had faced similar problems in the past. After describing the situation to the teachers and talking with the parents, the school was successfully evacuated and the storm never did materialize.As a result of this situation, the principal developed new procedures for handling such severe situations and provided the teachers with specific guidelines on how to handle similar problems in the future. In addition, the parents were to be informed at the beginning of the next school year as to what they should do in such a situation. According to the principal, his major learning from the situation was that crises can be more effectively resolved if there is immediate feedback from all persons involved in or affected by the situation.